Sensitivity Experiments

Step V Post process the forecast files

The penultimate step in this exercise will be to process your forecast files into GRIB and then GrADS formats. The wrf_post script is used to post-process WRF model forecasts from either the NMM or ARW cores. By default, the WRF EMS forecast files are in netCDF format on native model levels. The wrf_post routine will allow users to create GRIB formatted files containing many additional fields and interpolated to isobaric coordinates, which can be processed further and the resultant files shipped to other systems.

For this exercise, you will be processing the files into GrADS format. Each group will have the same set of fields available from their experiment to compare to any other simulation that they choose; however, most of you should focus on comparing your results to the suggested experiment (Appendix A). If there is another experiment that provides an interesting contrast to your simulation then feel free to discuss it as well.

The wrf_post configuration files are located in the <domain>conf/wrf_post directory. Fortunately, the files have already been modified so that you don't have to do anything except execute the following command:

All Do: % wrf_post --grads

After wrf_post is completed you will find GRIB 1 and GrADS files in the wrfpost/grib and wrfpost/grads directories respectively. If you are not familiar with GrADS display package there is no need to fear as images from your experiment have been created and placed on

your system. These are the images that you should primarily use for the experiment inter-comparison.

While you are waiting for wrfpost to process the experiment you can view images of bother the parent and nested domain by pointing your browser to:

wrf/util/saws/lab3/web/index.htm

The fields available for use in your evaluations are:

1) Hourly 10 meter winds (m/s) and MSLP (hpa)
2) Hourly total precipitation (mm)
3) Simulated Reflectivity (DbZ)
4) 03 hourly total precipitation (mm)
5) 03 hourly grid scale precipitation (mm)
6) 03 hourly convective precipitation (mm)
7) 300hpa winds (m/s) and height (dm)
8) 500hpa winds (m/s) and height (dm)
9) 500hpa temperatures (C) and height (dm)
10) 850hpa winds (m/s) and height (dm)
11) Storm Total Precipitation (mm)
12) Storm Total Convective Precipitation (mm)
13) Storm Total Grid Scale Precipitation (mm)

Step VI Interrogation of forecast results and presentations

Each group will be allotted 10 minutes to present the results of their experiment to the rest of the workshop. You should be prepared to discuss how the configuration of your experiment differed from that of the control simulation, and whether this difference resulted in changes to the forecast. Provide an explanation for the differences if possible.

Suggestions for inter-experiment comparisons:

a) The total amount of precipitation between experiments
b) Location of precipitation maxima between experiments
c) The timing of precipitation between experiments

d) The ratios of grid scale to convective precipitation
e) The locations and intensity of mesoscale features in the wind and MSLP fields
f) Impact of BC frequency
g) Impact of lower resolution initial conditions
h) Anything else that might be of interest

Notes:

End of Lab #3

Appendix A: Summary of Sensitivity Experiments

Name	Core	Cumulus Scheme	Dynamics	Microphysics	Other	Compare to run(s)
Control ARW	**ARW**	**KF**	**Non-Hydro**	**Lin**	**31 levels**	
Experiment 1	**ARW**	**BMJ**	**Non-Hydro**	**Lin**		**Control ARW**
Experiment 2	**ARW**	**Grell**	**Non-Hydro**	**Lin**		**Control ARW**
Experiment 3	**ARW**	**None**	**Non-Hydro**	**Lin**		**Control ARW**
Experiment 4	**ARW**	**KF**	**Non-Hydro**	**WSM3**		**Control ARW**
Experiment 5	**ARW**	**KF**	**Non-Hydro**	**Lin**	**21 levels**	**Control ARW**
Experiment 6	**ARW**	**KF**	**Non-Hydro**	**Lin**	**61 levels**	**Control ARW**
Experiment 7	**ARW**	**KF**	**Non-Hydro**	**Lin**	**0.5 deg Global GFS**	**Control ARW**
Experiment 8	**ARW**	**KF**	**Non-Hydro**	**Lin**	**0.5 deg GFS IC with 12km NAM BCs**	**Control ARW**